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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/748,175	12/31/2003	Lukas Trosman	24GA127098	5553

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HARNESS, DICKEY & PIERCE, P.L.C.
P.O. BOX 8910
RESTON, VA 20195

EXAMINER	
AWAI, ALEXANDRA F	

ART UNIT	PAPER NUMBER
3663	

DATE MAILED: 10/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/748,175	TROSMAN ET AL.	
	Examiner	Art Unit	
	Alexandra Awai	3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 August 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-10 and 12-20 have been cancelled. Claims 21-32 are new, and have been examined.

Response to Arguments

2. Applicant's arguments filed 8/24/2005 have been fully considered but, with respect to the prior art rejections of the 5/4/2005 Office Action, they are not in every respect persuasive.

Obviousness is established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). The test for obviousness is not that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). Although the specific configuration of rods may not be explicitly taught by the referenced prior art, such a configuration may still be considered obvious, given that the features of the claimed invention are suggested by the disclosures of the prior art and information known to skilled artisans.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 21-32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim language, being vague and indefinite, fails to clearly describe the disclosed invention.

For instance, it is not clear what is meant by "a channel having four sides representing sides of the bundle and having an opening therein" (claim 21). The sides of the channel may constitute the sides of the bundles, or not. The channel lacking openings is not a channel, and so the "opening therein" may arguably refer to the bundle, rather than the channel. The opening may also refer to a hole transecting the body of the channel. Furthermore, it is clear that the fuel rod subsets are not formed as rings, and yet the claim recites that the group consisting of all of the mentioned rods are arranged as a plurality of concentric fuel-rod rings. Given that the short-length fuel rod subsets have no defined faces, it is not clear how they can be in a facing relationship, or what such a relationship might signify (claims 21 and 29). Moreover, the term "triangular orientation" lends itself to spurious interpretations not within the scope of the disclosed invention. The three-rod subsets of claim 31 may be adjacent to the water passages and facing each other, but not necessarily also adjacent to each other. Additionally, it is not clear to what the "corresponding outermost row or column of the matrix" of claim 32 corresponds. Regarding claims 31 and 32, note that it is preferable to use the term "comprising" rather than "consisting" to communicate inclusion. The claims therefore convey ambiguity and incompleteness, rather than an acceptable generality or broadness.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 21-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over any of Aoyama *et al*, Orii *et al*, or Koyama *et al* in view of Ueda *et al* alone or with either Bender *et al* (II) or Ogiya *et al*, as set forth in the arguments of section 5 of the 5/4/2005 Office Action.

The primary references each show a structure that encompasses the basic inventive concept of the current application as noted in previous correspondence. The secondary reference shows that it is a well-known and advantageous expedient in the art to provide certain groupings of part-length rods. Note that a claimed configuration may be considered a matter of design choice which a person of ordinary skill in the art would have found obvious, absent persuasive evidence that the particular configuration was significant. The concept of including part-length rods in a fuel assembly in order to improve shut-down is well-known, and an optimization of a

presently disclosed device is not considered patentably distinct from the original device. The applicant has not shown how the 3-rod group is functionally distinct from the 2-rod group, or that it is not an obvious variant.

8. Claims 21-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Orii *et al*, and further in view of Ueda *et al*.

Orii *et al* explicitly teach virtually every aspect of the current invention, except for 3-rod groupings of partial-length rods (see Fig. 15). Note the statement that "short length fuel rods may be differently arranged from the arrangement of FIG. 21 if the short length fuel rods are arranged both in the positions in the outermost tier and in positions adjacent to the water rods" (column 16, line 39+), which shows that the Orii *et al* disclosure suggests features that encompass the limitations of the current application. Orii *et al* also teach that 10x10 and 9x9 rod matrices are established fuel assembly concepts. However, even if it the configurations claimed in the current application were not *prima facie* obvious, as argued by the previous examiner, Ueda *et al* teach the 3-rod grouping and the use of both short and intermediate fuel rods. It would have been obvious to one skilled in the art at the time of the invention to combine the aforementioned teachings in order to provide the benefits that are the disclosed objects of all of the referenced prior art.

Conclusion

9. The prior art made of record in previous correspondence and not relied upon is considered pertinent to applicant's disclosure.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexandra Awai whose telephone number is (517) 272-3079. The examiner can normally be reached on 8:30-5:00 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AA
October 12, 2005

JACK KEITH
SUPERVISORY PATENT EXAMINER